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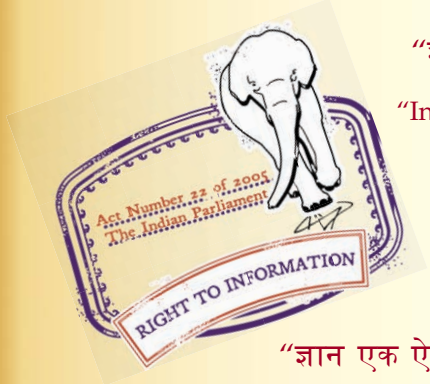
IS 1065 (1989): Bleaching Powder, Stable [CHD 1: Inorganic Chemicals]



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"Knowledge is such a treasure which cannot be stolen"

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IS 1065 : 1989
(Reaffirmed 2003)

Indian Standard

BLEACHING POWDER, STABLE — SPECIFICATION

(Second Revision)

भारतीय मानक

ब्लीचिंग पाउडर, स्टेबल — विशिष्ट

(दूसरा पुनरीक्षण)

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BUREAU OF INDIAN STANDARDS
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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 28 July 1989, after the draft finalized by the Acids, Alkalis and Halides Sectional Committee had been approved by the Chemical Division Council.

This standard was first issued in 1957 and subsequently revised in 1971. This is being revised again to alter the requirements of Table 1 and to incorporate a new requirement on keeping quality. The packing clause has also been suitably modified.

Stable bleaching powder is a carrier of chlorine — the ingredient most widely used for bleaching, whitening, sterilization, disinfection and environmental hygiene. The main advantage of stable bleaching powder as against other bleaching powders is that it retains its available chlorine content for a longer period when properly stored.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BLEACHING POWDER STABLE — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for stable bleaching powder.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
IS 695 : 1986	Specification for glacial acetic acid (*third revision*)
IS 1070 : 1977	Specification for water for general laboratory use (*second revision*)
IS 2316 : 1968	Methods of preparation of standard solutions for colorimetric and volumetric analysis (*first revision*)
IS 4905 : 1968	Methods for random sampling

3 TERMINOLOGY

3.0 For the purpose of this standard, the following definitions shall apply.

3.1 Available Chlorine

The chlorine equivalent of the hypochlorite chlorine present in bleaching powder.

3.2 Stability

The difference in the chlorine equivalent of the hypochlorite chlorine present in the sample before and after heating it for 2 hours at 100 ± 2°C.

4 GRADES

The material shall be of two grades, namely, Grade 1 and Grade 2.

5 REQUIREMENTS

5.1 Manufacture

Stable bleaching powder shall be manufactured by chlorination of slacked lime.

5.2 Description

Stable bleaching powder shall be white to slightly yellowish-white in appearance and shall be free from hard lumps and any visible impurities.

5.2.1 The material shall be dry and free-flowing.

5.3 The material shall also comply with the requirements given in Table 1, when tested according to the methods prescribed in Annex A. Reference to relevant test method is given in col 5 of the table.

Table 1 Requirements for Bleaching Powder, Stable

Sl No.	Characteristic	Requirement		Method of Test (Ref to Clause No. in Annex A)
		Grade 1	Grade 2	
(1)	(2)	(3)	(4)	(5)
i)	Available chlorine, percent by mass, *Min*	34·0	32·0	A-2
ii)	Stability, loss of chlorine on the basis of initial available chlorine, *Max*	1/15	1/11	A-3
iii)	Moisture, percent by mass, *Max*	0·3	0·5	A-4
iv)	Particle size (passing through 1·70 mm IS Sieve), percent by mass, *Min*	99·5*	99·0	A-5

5.4 Keeping Quality

The material of both the grades shall comply with the minimum available chlorine content for not less than 30 days from the date of manufacture which should be specified on the container. After a period of more than 30 days the minimum available chlorine for both the grades shall be as agreed to between the purchaser and the supplier.

6 PACKING, MARKING AND STORING

6.1 Packing, Marking and Storing

The material shall be packed in the laminated HDPE bags having two inner liners and tied at the mouth of each inner bag separately with nylon rope and then the outer laminated HDPE woven sack is stitched using polypropylene twisted thread with two rows — each row being done separately — one being above the other for the protection during transit. The packages used shall be free from dirt or other foreign materials which are likely to cause decomposition of stable bleaching powder.

6.2 Marking

The containers shall be securely packed and marked with the name of the manufacturer,

grade, mass of the material in the package, recognized trade-mark, if any, batch number and the date of packing and despatch.

6.3 Storing

While shipping, the material shall be stored away from the boilers or any other heat source.

7 SAMPLING

Representative samples of the material shall be drawn and their conformity to this standard shall be determined in accordance with the method prescribed in Annex B.

ANNEX A

(*Clause* 5.3 and *Table* 1)

METHODS OF TEST FOR STABLE BLEACHING POWDER

A-1 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

A-2 DETERMINATION OF AVAILABLE CHLORINE

A-2.1 Reagents

A-2.1.1 Potassium Dichromate Solution

0·1 N. Carefully pulverize a quantity of potassium dichromate ($K_2Cr_2O_7$) and dry at 110 ± 5°C to constant mass. Dissolve 4·904 g of the dried reagent in water to make exactly 1 litre and mix thoroughly.

A-2.1.2 *Standard Sodium Thiosulphate Solution*, 0·1 N (*see* 5.5 of IS 2316 : 1968).

A-2.1.2.1 *Standardization of sodium thiosulphate solution*

In a 250-ml glass-stoppered flask, take 2 g of potassium iodide and about 25 ml water to dissolve it. Then add approximately 2 g of sodium bicarbonate and 5 ml of hydrochloric acid. Just before the effervescence ceases, add 25 ml of 0·1 N potassium dichromate solution. When the effervescence ceases, stopper the flask and allow to stand for 10 minutes in a cool and dry place. Dilute with 50 ml of water and titrate against standard sodium thiosulphate solution till the liquid in the flask has assumed a yellowish green colour. Then add starch solution and continue with the addition of sodium thiosulphate solution until the blue colour is just discharged.

A-2.1.3 *Starch Indicator*

Triturate 1 g of starch with 10 ml of cold water and pour, with constant stirring, into 200 ml boiling water. Allow to settle and use the clear supernatant liquid.

A-2.1.4 *Potassium Iodide*, solid.

A-2.1.5 *Glacial Acetic Acid*, *see* IS 695 : 1986.

A-2.2 Procedure

Weigh accurately about 2·5 g of the sample and grind in a mortar with water till a smooth paste is formed. Add 15 to 25 ml of water and decant off the fine part into a 250-ml flask. Again grind the material left behind and repeat the process of decanting off till no gritty material is left. Wash the pestle and mortar in the same flask. Make up the solution to 250 ml. Take 25 ml of this solution, add 2 g of potassium iodide and 100 ml of water followed by 2 ml of glacial acetic acid. Titrate it against the standard sodium thiosulphate solution till the pale yellow colour is left. At this stage add starch indicator and continue the addition of standard sodium thiosulphate solution till the blue colour discharges.

A-2.3 Calculation

Available chlorine,

$$\text{percent by mass} = \frac{A \times N \times 35{\cdot}46}{M}$$

where

A = volume in ml of standard thiosulphate solution used,

N = normality of standard sodium thiosulphate solution, and

M = mass in g of sample taken for the test.

A-3 DETERMINATION OF STABILITY

A-3.0 Outline of the Method

Crush the sample in a mortar and sieve. Heat it at 100 ± 2°C for 2 hours and determine the available chlorine. The difference in available chlorine content before and after heating is indicative of the stability of the bleaching powder.

A-3.1 Apparatus

A-3.1.1 *Test Tube*, about 150 mm long and 25 mm in diameter.

A-3.1.2 *Air Condenser*, glass tube, about 375 mm long and 5 mm in diameter.

A-3.1.3 *Rubber Stoppers*

A-3.1.4 *Bath*, capable of maintaining at 100 ± 2°C.

A-3.2 Procedure

Crush the material to powder. This operation shall be carried out with the minimum delay. Fill a test-tube to a depth of 125 mm with the

sieved material and tap lightly three times. Close the mouth of the test-tube with the rubber stopper carrying the air condenser so that about 12 mm of this tube projects below the base of the stopper into the test-tube. Place the test-tube in a bath maintained at 100 ± 2°C for 2 hours. At the end of this period, remove the test-tube from the bath. Remove the stopper carrying the air condenser and close the test-tube with a solid stopper. After standing for 15 minutes, transfer the material to a glass bottle. Shake well and store.

A-3.2.1 Determine the available chlorine on the stored material (*see* A-3.2) in manner as given in A-2.

A-3.3 Calculation

$$\text{Stability} = \frac{M_1 - M_2}{M_1}$$

where

M_1 = percent by mass of available chlorine, as determined under A-2; and

M_2 = percent by mass of available chlorine after heating, as determined under A-3.2.1.

A-4 DETERMINATION OF MOISTURE

A-4.1 Procedure

Weigh accurately 15 to 20 g of the sample in an open dry weighing glass, and place it for 24 hours in a vacuum desiccator over fused anhydrous calcium chloride under an absolute pressure of 30 to 40 mm of mercury. Weigh the weighing glass again. The decrease in mass corresponds to the moisture content of the sample.

A-4.2 Calculation

Moisture content,

$$\text{percent by mass} = \frac{M_1 - M_2}{M_1}$$

where

M_1 = mass of material taken before drying, and

M_2 = mass of material after drying.

A-5 DETERMINATION OF PARTICLE SIZE

A-5.1 Procedure

Weigh accurately 50 g of the sample and place it over 1·70 mm IS Sieve. Shake it for 15 minutes. The mass of material passing through the sieve gives the particle size of the sample expressed as percentage by mass.

A-5.2 Calculation

$$\text{Material passing through 1·70 mm IS Sieve, percent by mass} = \frac{M_1 - M_2}{M_1} \times 100$$

where

M_1 = mass of material taken for sieving, and

M_2 = mass of material retained over the sieve.

ANNEX B

(*Clause* 7·1)

SAMPLING OF BLEACHING POWDER, STABLE

B-1 GENERAL REQUIREMENTS OF SAMPLING

B-1.0 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

B-1.1 Samples shall not be exposed to atmosphere for a longer time than necessary, and sampling shall be done as rapidly and as thoroughly as possible.

B-1.2 Samples shall be placed in a cool and dry place.

B-1.3 The sampling instrument shall be clean and dry when used.

B-1.4 To draw a representative sample, the contents of each containers selected for sampling shall be mixed as thoroughly as possible by rolling, shaking or stirring by suitable means.

B-1.5 The samples shall be placed in clean, dry and air-tight glass or other suitable containers on which the material has no action.

B-1.6 The sample containers shall be of such a size that they are nearly filled by the samples.

B-1.7 Each sample container so filled shall be sealed air-tight after filling, and marked with full details of sampling, the date of sampling, the month and year of manufacture of the material and its grade.

B-1.8 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination. Care should be taken to avoid direct contact of bleaching powder with skin. Face should be kept at a safe distance from the container when it is opened.

B-1.9 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal shade temperature.

B-2 SCALE OF SAMPLING

B-2.1 Lot

All the containers in a single consignment of same grade of the material drawn from a single

batch of manufacture shall constitute the lot. If a consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the groups of containers in each batch shall constitute separate lots.

B-2.2 The number of containers (n) to be selected from the lot shall depend upon the size of the lot (N) and shall be in accordance with Table 2.

Table 2 Number of Containers to be Selected

Lot Size (N) (1)	Sample Size (n) (2)
2 to 8	2
9 ,, 27	3
28 ,, 64	4
65 ,, 125	5
126 ,, 216	6
217 ,, 343	7
344 ,, 512	8
513 ,, 729	9
730 ,, 1 000	10
1 001 and above	11

B-2.3 These containers shall be selected at random from the lot and in order to ensure randomness of selection, random number tables may be used (*see also* IS 4905 : 1968). In case, such tables are not available, the following procedure may be adopted:

Starting from any container, count them in the order 1, 2, 3,....., up to r where r is the integral part of N/n. Every rth container thus counted shall be withdrawn to form the sample.

B-3 PREPARATION OF SAMPLES

B-3.1 Draw with an appropriate galvanized iron or other suitable plastic sampling instrument (*see* Fig. 1) small portions of the material from different parts of each selected container. The total quantity of the material drawn from each container shall not exceed 2 kg.

NOTE — The dimensions of the galvanized iron or plastic sampling instrument shall depend on the size of the container so that the tip of the sampler should reach the bottom of the container and the sample may contain material from all the layers of material in the container.

B-3.2 The material drawn from all the selected containers according to **B-3.1** shall be thoroughly mixed together. The total material so obtained shall be divided into three approximately equal parts each of which shall be called a composite sample to represent the lot.

B-3.3 Each of the three composite samples obtained in **B-3.2** shall be immediately transferred to appropriate galvanized iron containers which shall be sealed air-tight immediately after filling and marked with necessary details for identification.

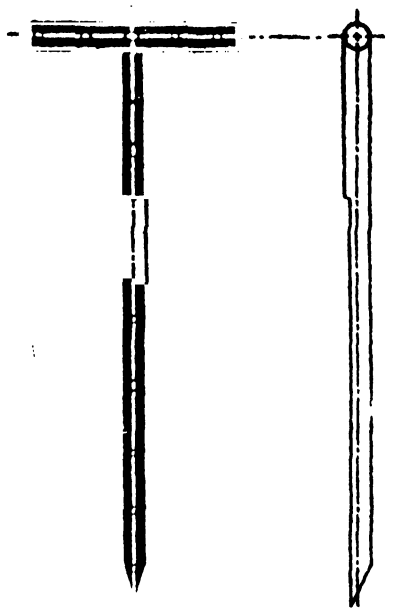

FIG. 1 GALVANIZED IRON OR PLASTIC SAMPLING INSTRUMENT

B-3.4 One of the three composite samples shall be marked for the purchaser, another for the supplier, and the third kept as a referee sample.

B-3.5 The referee sample shall be kept at a place and under conditions agreed to between the purchaser and the supplier. The referee sample shall be used in case of a dispute.

B-4 NUMBER OF TESTS AND CRITERION FOR CONFORMITY

B-4.1 Examination and Tests

The purchaser may examine and test separately each of the reduced samples constituting a test sample for compliance with the individual requirements or may prepare for the purpose of such examination and at every stage of the progress of the examination, a composite sample representative of the whole lot by mixing all the reduced samples constituting the test sample.

B-4.2 Criterion for Conformity

When the individual reduced samples in a test sample are separately examined and the results vary from one reduced sample to another so as to show that one or more results are outside the limits prescribed in the specification. The criteria for conformity for the quality of the lot for the purpose of acceptance on the basis of the results obtained shall be at the discretion of the purchaser, unless otherwise agreed to between the purchaser and the supplier.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 JUNE 1996
TO
IS 1065 : 1989 BLEACHING POWDER, STABLE — SPECIFICATION

(Second Revision)

(*Page* 1, *clause* 5.1) — Substitute 'slaked' *for* 'slacked'.

(*Page* 1, *clause* 5.4, *line* 3) — Substitute 'date of packing' *for* 'date of manufacture'.

(*Page* 1, *clause* 6.1) — Substitute the following for the existing:

'6.1 Packing, Marking and Storing

The material shall be packed in laminated HDPE bags having two inner liners and tied at the mouth of each inner bag separately with nylon rope, HDPE thread or polypropylene *sutli* and then the outer laminated HDPE woven sack shall be stitched using polypropylene, HDPE or nylon thread with two rows — each row being done separately — one being above the other for the protection during transit. The material may also be packed in other containers as agreed to between the purchaser and the supplier. The packages used shall be free from dirt or other materials which are likely to cause decomposition of stable bleaching powder.'

(*Page* 1, *clause* 6.2) — Substitute the following for the existing:

'6.2 Marking

The containers shall be securely packed and marked with the following information:

a) Name and grade of the material;

b) Indication of the source of manufacture;

c) Mass of the material;

d) Recognized trade-mark, if any; and

e) Batch number and date of packing.

(*Page* 3, *clause* A-4) — Substitute the following for the existing:

'A-4 DETERMINATION OF MOISTURE

Two methods are prescribed. Method A shall be the referee method in case of dispute, and Method B shall be the alternative method.

A-4.1 Method A

A-4.1.1 *Procedure*

Weigh accurately 15 to 20 g of the sample in an open dry weighing glass and place it for 24 hours in a vacuum desiccator oven fused anhydrous calcium chloride under an absolute pressure of 30 to 40 mm of mercury. Weigh the weighing glass again. The decrease in mass corresponds to the moisture content of the sample.

A-4.1.2 *Calculation*

$$\text{Moisture content, percent by mass} = \frac{M_1 - M_2}{M_1} \times 100$$

where

M_1 = mass of material taken before drying, and
M_2 = mass of material after drying.

A-4.2 Method B

A-4.2.1 *Procedure*

Weigh accurately 15 to 20 g of the sample in an open dry weighing glass and place it for 4 hours in a vacuum desiccator over phosphorus pentaoxide under an absolute pressure of 30 to 40 mm of mercury. Weigh the weighing glass again. The decrease in mass corresponds to the moisture content of the sample.

A-4.2.2 Same as clause A-4.1.2.'

(CHD 002)

Reprography Unit, BIS, New Delhi, India